ARTIFICIAL INTELLIGENCE

# Digital Ops Planning That Survives Disruption

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Boxer Mike Tyson famously said, “Everyone has a plan until they get punched in the face.” In other words, planning often fails. We’ve all seen it happen. We may have even participated in it.

Consider a manufacturing business that prides itself on being prepared and has earmarked five people to develop the weekly production plan. They wrestle with the plan details; optimize the production sequence, inventory levels, and assembly line configuration; and design a set of procedures that will maximize the value generated by their manufacturing footprint. On a Monday at 8:00 the production blueprint is set in motion. By 11:00, one of the tasks overruns the schedule. Frustrated and unable to follow the plan, the operations team tosses it aside and instead runs on

instinct. Carefully orchestrated efficiency, timing, team collaboration, and production metrics all go out the window. Just getting through the week, even if a bit disjointed, is all that matters now. The next Monday, the team is given a new plan.

This scenario is all too common, even when companies have adopted sophisticated tools that automate planning. And its prevalence raises a crucial question for companies in virtually any industry: How can businesses make plans that survive contact with the real world?

A plan creates value by prescribing better decisions today, to guide a company through time to arrive at an advantageous position in the future. Plans serve as an aspirational model for how the future will play out, and value will only be realized if the way the future plays out correlates closely to the plan. However, plans are not crystal balls; unanticipated disruptions will almost certainly occur. A good plan is one that survives and can be followed even when things go wrong.

A well-designed plan includes contingency and alternate pathways to absorb disruption, and a system of tools and technologies for rapid replanning to get things back on track when the unexpected happens. With the right approach and technologies, companies can create plans that are robust to variability, changing the readiness dynamics so they stay a step ahead of uncertainty. (See "A Guide to Planning.") To help companies implement good planning, BCG developed an industry-agnostic framework built around three time horizons—focused on *strategy*, *tactics*, and *disruption management*—that together span the near to the long term. The most appropriate planning horizons will vary from business to business, but they almost always have at least these three components.

## A Guide to Planning

Every company's needs and priorities are unique, but the path to a stronger planning system typically follows a few common steps:

- **Establish a baseline.** Assess how decisions are made and where they break down—which plans fail, why, and where coordination gaps exist. Start addressing those shortcomings early.
- **Design a roadmap.** Define the goals of your planning efforts. Identify the activities and operations to target, and lay out the sequence for developing plans around them.
- **Stand up a solid team.** Early success depends on a small, high-performing group of planners, technologists, and operators empowered to make rapid progress. A few exceptional people, focused and accountable, will always outperform a large average team. Bring in outside specialists where critical expertise is missing to fill the gaps and accelerate delivery.

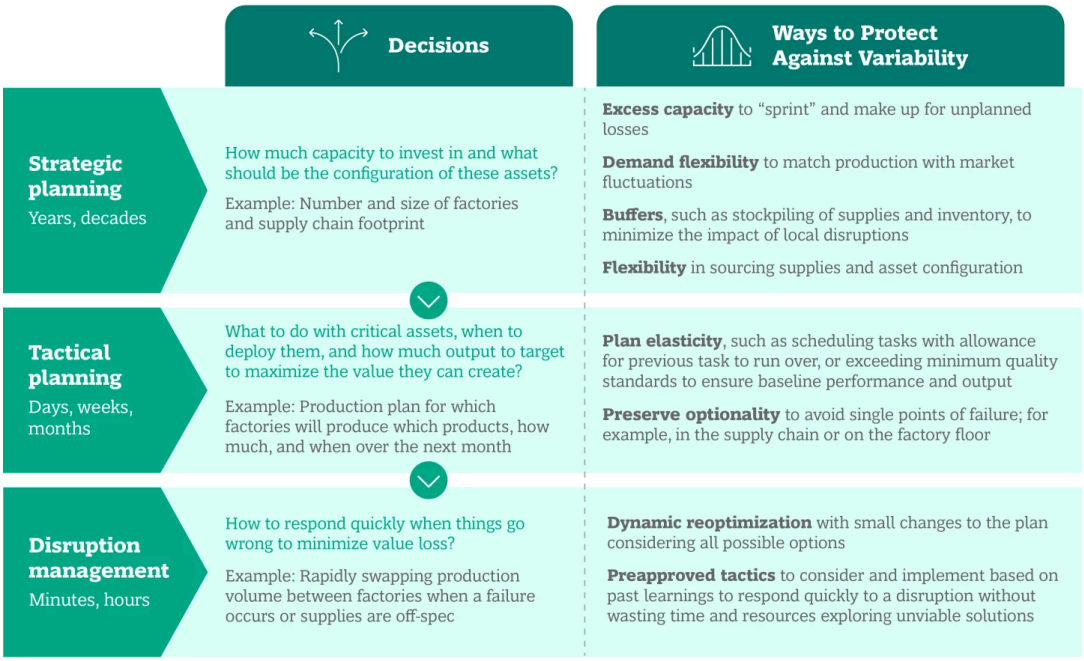
- **Build the first use case.** Start with something visible and material, where better planning will deliver clear value. Trying to build everything at once almost always fails.
- **Invest progressively.** Expand use cases step by step. Allocate capital in stages as each planning effort proves its value. Success should unlock the next round of funding.
- **Create a support backbone.** Planning systems need ongoing care and iteration. Establish a dedicated support team—internal or external—to maintain and continuously upgrade the system.
- **Engage the business.** Run workshops across levels—from C-suite to planners—to build shared understanding, align KPIs, and clarify accountability. Planning succeeds only when leadership commitment spans functions.
- **Appoint clear ownership.** Decide where the planning transformation lives—under commercial, operations, or an independent office—and ensure that it balances financial, strategic, and operational priorities.

# The Benefit of Time Horizons

Businesses make decisions at very different cadences—from long-term investment choices to minute-by-minute responses when things go wrong. Thinking in terms of time horizons helps companies separate these decisions, understand how they interact, and apply the right tools for each.

Each horizon involves a different kind of decision to determine which assets to build, how to use them, or how to respond when things change. (See the exhibit.) Importantly, these decisions are nested: strategic choices define what is possible tactically, and tactical decisions create options for how one can react in moments of disruption.

A Framework for Planning Over Three Time Horizons




**Source:** BCG analysis.

At each horizon, variability appears in different forms, such as demand fluctuations, process overruns, or equipment failures, and requires distinct actions. The right way to handle uncertainty in long-term capital planning is very different from how it's handled on the factory floor or in a logistics control tower.

Though the time scales differ across industries, the pattern is remarkably consistent. Every organization makes long-term choices that shape its capabilities, short-term plans that deploy them, and quick adjustments when reality veers off course.

This framework connects those horizons and shows how to keep each of them resilient when variability inevitably hits back.

# Strategic Planning Horizon

The strategic horizon looks out over years, often a decade or more. Decisions made here define the overall structure of the business—how much to invest, markets to pursue, and how to configure capacity. It's where companies make big, capital-intensive calls about product lines, customer bases, geographic reach, technologies to scale, and the level of resilience to build into their operations.

In mining, for instance, this might mean selecting which sites will supply the optimal blend of high- and low-phosphorous iron ore for steel customers. In manufacturing, it could involve determining how many plants are needed to meet long-term demand while still absorbing inevitable

disruptions. For an airline, strategic decisions include deciding how many aircraft to purchase, what types, and which routes to serve at what daily frequency.

Managing variability in this horizon embeds structural resilience—building flexibility and protection directly into the system. This includes maintaining excess capacity to accommodate demand surges or supply shocks, stockpiling critical inputs to buffer against failures, and building network diversity across assets and geographies to prevent single points of failure. It may also be important to have demand flexibility—contracts with limited downside if production is disrupted or access to spot markets for excess production.

Advanced technologies can significantly enhance this phase. Simulation models—virtual replicas of assets, networks, or entire operations—mirror real-world data and behavior, allowing planners to test how systems respond to shocks before they happen. Companies can explore thousands of simulated futures, safely experiment with variability, and uncover structural weaknesses in a controlled environment. The result is a business designed to be both cost-efficient and robust, ensuring that long-term plans remain viable even in the face of new conditions.

# Tactical Planning Horizon

The tactical horizon is narrower and more immediate, involving plans executed over the coming weeks or months. It focuses on translating strategic intent into actionable steps—allocating resources, sequencing production, managing inventory, and matching supply with demand. The goal is to maximize value while keeping operations agile and responsive to variability.

Tactical decisions are shaped—and limited—by choices made in the strategic horizon. The strategic phase delineates available assets and capacity; tactical planning determines how best to use them. In a dairy business, this might mean deciding which farms supply which plants and what products each will produce daily. In mining, it could determine which parcels of ore to move from each site to the port and how to blend them to create a saleable product.

Managing variability in this horizon is dependent on designing plans that remain effective even when small things go wrong. Buffers of time, inventory, or capacity should be in place that absorb minor shocks without triggering full replans. They embed optionality into schedules, allowing for quick local adjustments without cascading disruption. The focus is on execution stability, ensuring the system performs well across a range of plausible conditions rather than chasing an ideal state that collapses at the first deviation.

Digital and analytical tools strengthen tactical planning not by continuously reoptimizing, but by revealing potential points of fragility and proactively implementing contingency options. Machine learning models can forecast the likelihood and impact of disruptions—from equipment overruns to transport delays—and suggest time buffers that will absorb potential delays. Optimization algorithms can then use these insights to design schedules and allocations that balance efficiency

with resilience, embedding flexibility exactly where it adds the most value. The result is a plan that holds its shape when reality nudges it.

# Disruption Management Horizon

The disruption horizon plays out in real time. This is where plans meet reality. The challenge is a balancing act: adhering to the plan when possible, but adapting quickly if the unexpected occurs. Some disruptions are obvious and local—a delayed aircraft, a broken conveyor, a missing shipment—and demand immediate fixes to prevent small issues from cascading into system-wide failures.

These rapid recoveries only work if the upstream plans contain sufficient flexibility. For instance, an airline can swap aircraft efficiently only if its strategic and tactical plans include spare capacity at key hubs and adaptable crew schedules on critical routes. Likewise, a mining operator can recover from a light train load only if the logistics plan anticipated shortfalls and embedded options to reshuffle stock without missing customer commitments.

Managing variability in this horizon requires acting fast, intelligently, and in proportion to the problem. Pre-approved playbooks containing sets of small, low-risk actions that can be triggered without escalation can sometimes help. They empower local teams to make quick calls within guardrails, while maintaining system-wide visibility. However, in many cases such playbooks fall short because the range of options is too broad, overwhelming people in the midst of rapid decisions.

Digital tools enhance this discipline by instantly evaluating vast numbers of micro-adjustments, far more than humans could. When a disruption strikes, algorithms can test millions of small changes—swapping resources, resequencing tasks, or rerouting shipments—to find the minimal adjustment that preserves the most value. The goal is not to rebuild the plan, but to adapt it without breaking it: make only the changes that are truly necessary and make them as small as possible. That way, the plan continues to guide operations, even when reality doesn't fully cooperate.

# The People Dimension

Even the most sophisticated framework or technology adds little value without the right people. Each planning horizon is typically owned by a different team. For the system to function, their work must cascade seamlessly. Tactical plans must reflect strategic intent. Disruption actions must respect tactical guardrails. Break the chain, and value vanishes.

Short-term fixes can undermine long-term goals—solving today's problem at tomorrow's expense. Preventing this requires clear handovers and a shared understanding of the plan's trade-offs and priorities: why the plan was designed the way it was and which parts must hold even under pressure.

Organizing for this alignment requires deliberate design. Shared KPIs and cross-horizon metrics ensure that each team's success depends on the next team's outcomes. Co-location and joint planning forums help transfer context and build trust, reducing the friction that comes from functional silos.

Technology reinforces this alignment, but only when it is clear and understandable. The best planning platforms are "white boxes," showing how decisions are made instead of hiding the process behind opaque algorithms. They surface reasoning, reveal trade-offs, and let planners explore different scenarios to test and refine outcomes. When digital tools make reasoning transparent, they boost collaboration and trust across teams and time horizons, letting multi-skilled units handle more of the planning continuum with fewer handovers.

# Technology Choices: Buy vs. Build

Every company faces the same question with digital planning tools: buy or build? The answer hinges less on ideology and more on whether the business environment demands flexibility and exclusivity in its technology.

Off-the-shelf solutions offer speed, maturity, and lower upfront cost. Modern platforms provide powerful capabilities, such as forecasting, optimization, and scenario modeling, and can be configured to fit most planning processes. For many organizations, this is the fastest route to better planning discipline and data visibility. But packaged tools often impose a predefined logic. If a company's competitive advantage depends on unique planning rules or highly distinctive operations, these tools can quickly become a constraint.

Building proprietary systems comes with a trade-off: they are slower and costlier to develop but can be precisely tailored to how the business competes. In-house development can encode the company's specific decision logic, data models, and planning horizons directly into the platform's algorithms. However, custom builds demand ongoing investment in engineering, data management, and governance.

The most resilient organizations increasingly take a hybrid approach. They choose modular platforms for core capabilities such as data pipelines, visualization, standard optimization—and build custom tools only when differentiation matters. AI models, for example, can be proprietary while running on a commercial planning backbone. This mix preserves flexibility without the cost and delay of reinventing technology that already works.

Companies face surprises every day. The ones that respond best are not the most flexible in the moment, but the most prepared. They have a plan for planning itself—one built on coherent time horizons, aligned teams, and the right tools to manage variability. When these elements come together, the result is exactly what every business needs: a plan that can survive contact with reality.

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